Mathematics Standards Articulated by Grade Level

Strand 1: Number Sense and Operations

Every student should understand and use all concepts and skills from the previous grade levels. The standards are designed so that new learning builds on preceding skills and are needed to learn new skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of mathematical strands.

Concept 1: Number Sense	The concept of understanding and applying numbers, ways of representing numbers, the relationships among numbers and different number systems.
Concepts 2: Numerical Operations	The concept of understanding and applying numerical operations and their relationship to one another.
Concept 3: Estimation	The concept of using estimation strategies reasonably and fluently.

Strand 2: Data Analysis, Probability, and Discrete Math

Every student should understand and use all concepts and skills from the previous grade levels. The standards are designed so that new learning builds on preceding skills and are needed to learn new skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedde d throughout the teaching and learning of mathematical strands.

Concept 1: Data Analysis (Statistics)	The concept of understanding and applying data collection, organization and representation to analyze and sort data.
Concept 2: Probability	The concept of understanding and applying the basic concepts of probability.
Concept 3: Discrete Mathematics: Systematic Listing & Counting	The concept of understanding and demonstrating the systematic listing and counting of possible outcomes.
Concept 4: Discrete Mathematics: Vertex-Edge Graphs	The concept of understanding and applying vertex-edge graphs.

Strand 3: Patterns, Algebra, and Functions

Every student should understand and use all concepts and skills from the previous grade levels. The standards are designed so that new learning builds on preceding skills and are needed to learn new skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of mathematical strands.

Concept 1: Patterns	The concept of identifying patterns and applying pattern recognition to reason mathematically.
Concept 2: Functions & Relationships	The concept of describing and modeling functions and their relationships.
Concept 3: Algebraic Representations	The concept of representing and analyzing mathematical situations and structures using algebraic representations.
Concept 4: Analysis of Change	Analyze change in a variable over time and in various contexts.

Strand 4: Geometry and Measurement

Every student should understand and use all concepts and skills from the previous grade levels. The standards are designed so that new learning builds on preceding skills and are needed to learn new skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of mathematical strands.

Concept 1: Geometric Properties	The concept of analyzing the attributes and properties of two and three dimenional shapes and developing mathematical arguments about their relationships.
Concept 2: Transformation of Shapes	The concept of applying spatial reasoning to create transformations and use symmetry to analyze mathematical situations.
Concept 3: Coordinate Geometry	The concept of specifying and describing spatial relationships using coordinate geometry and other representational systems.
Concept 4: Measurement	The concept of understanding and applying appropriate units of measure, measurement techniques, and formulas to determine measurements.

- **Units of Measure**
- **Geometric Objects**
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Strand 5: Stucture and Logic

Every student should understand and use all concepts and skills from the previous grade levels. The standards are designed so that new learning builds on preceding skills and are needed to learn new skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of mathematical strands.

Concept 1: Algorithms and Algorithmic Thinking

The concept of using reasoning to solve mathematical problems in contextual situations.

Concept 2: Logic, Reasoning, Arguments, and Mathematical Proof

The concept of evaluating situations, selecting problem-solving strategies, drawing logical conclusions, developing and describing solutions and recognizing their applications.